

PATENT SPECIFICATION

(11) 1 203 134

DRAWINGS ATTACHED



1 203 134

(21) Application No. 14062/68 (22) Filed 22 March 1968

(45) Complete Specification published 26 Aug. 1970

(51) International Classification A 01 d 41/12

(52) Index at acceptance

A1F L3

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(54) IMPROVEMENTS IN OR RELATING TO COMBINE HARVESTERS

(71) We, WISSENSCHAFTLICH - TECHNISCHES ZENTRUM FÜR LANDTECHNIK, of Gartenstrasse, 7912 Schlieben, East Germany, a body corporate organised and existing under the laws of East Germany, do hereby declare the invention, for which we pray that a patent may be granted to us, and the method by which it is to be performed, to be particularly described in and by the following statement:—

The invention relates to a combine harvester and is concerned with means for uniformly distributing or metering the cut crop material passing through the combine harvester to a threshing device of the combine harvester.

According to the present invention there is provided a combine harvester including an elevator for supplying a layer of cut crop to a threshing device of said harvester, means for separating from said layer any excess crop material which causes the layer to exceed a predetermined thickness and means for reintroducing the separated excess material into the conveying path leading to said threshing device or into the threshing device, said elevator comprising an inclined endless elevator belt movable relatively to a fixed wall spaced from one run of said belt, a passage being formed between said one run and said fixed wall along which the cut crop is conveyed by said belt, the lower inlet end of said conveyor being swingable about an axis located at the upper outlet end of the conveyor, means for sensing swinging movement of the conveyor, a valve member located at the outlet from said passage, means for moving the valve member from a position in which it directs all of the crop being conveyed along said passage to said threshing device to a position in which part of said crop is separated by the valve member and directed to another path, said means for moving said valve member being actuated in response to the means for sensing swinging movement of said elevator.

Two embodiments of the invention will now be described with reference to the accompanying drawings, in which:—

Figure 1 is a diagrammatic longitudinal

section through part of a combine harvester embodying the invention, and

Figure 2 shows an alternative apparatus for carrying out the invention.

The drawings show only the part of the combine harvester to which the present invention applies. The apparatus shown in figure 1 comprises an inclined endless elevator belt 10 which is movable relative to a fixed casing wall 11. The lower run of the elevator belt 10 and the lower part of the fixed wall 11 form between them a passage 12 along which the cut crop is conveyed by the elevator belt 10. The elevator belt 10 is passed around a lower roller 13 and around an upper roller 14. The lower end of the elevator belt 10 and the lower part of the fixed wall 11 form between them a passage 12 along which the cut crop is conveyed by the elevator belt 10. The elevator belt 10 is passed around a lower roller 13 and around an upper roller 14. The lower end of the elevator belt 10 and the roller 13 are arranged to be swingable about the axis of the upper roller 14.

Operatively connected to the lower roller 13 is a pulse emitter 15 connected with a control system 16 adapted to operate a valve member 17 arranged at the discharge end of the passage 12.

The passage 12 leads to a threshing apparatus 18.

In use, the cut crop is fed to the intake end of the elevator belt 10 and it is drawn up the passage 12 and discharged therefrom to the threshing apparatus 18, the valve member 17 being in the full line position indicated in figure 1. If the layer of cut crop being fed to the elevator belt 10 increases in thickness then the roller 13 and the lower end of the elevator belt 10 will swing away from the lower part of the fixed wall 11 and this movement will operate the pulse emitter 15 which will transmit a signal, dependent upon the degree of swinging movement, to the control system 16 and this will move the valve member 17 away from the full line position to a position in which the discharge end of the passage 12 is placed in communicating with a passage 19 formed

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between the upper run of the elevator belt 10 and the upper part of the casing wall 11. Part of the cut crop material being discharged from the passage 12 is separated by the valve member 17 and directed into the passage 19 and the remainder is directed into the threshing apparatus 18. The excess cut crop material passes along the passage 19 and is reintroduced into the conveying path of the cut crop at the lower end of the elevator belt 10.

In the embodiment shown in figure 2 the excess cut crop is fed to a storage container 20 where it is subjected to a compacting pressure. The cut crop is discharged from the container 20 through metering rollers 21 so that a continuous quantity of material can be steadily discharged to a charging drum 22 which supplies the threshing apparatus 18.

The storage container 20 receives the excess cut crop discharged from the passage 12, stores it for a time and then supplies metered quantities to the threshing apparatus, when the supply of cut crop falls below a predetermined level.

WHAT WE CLAIM IS:—

1. A combine harvester including an elevator for supplying a layer of cut crop to a threshing device of said harvester, means for separating from said layer any excess crop material which causes the layer to exceed a predetermined thickness and means for reintroducing the separated excess material into the conveying path leading to said threshing device or into the threshing device, said elevator comprising an inclined endless elevator belt movable relatively to a fixed wall spaced from one run of said belt, a

passage being formed between said one run and said fixed wall along which the cut crop is conveyed by said belt, the lower inlet end of said conveyor being swingable about an axis located at the upper outlet end of the conveyor, means for sensing swinging movement of the conveyor, a valve member located at the outlet from said passage, means for moving the valve member from a position in which it directs all of the crop being conveyed along said passage to said threshing device to a position in which part of said crop is separated by the valve member and directed to another path, said means for moving said valve member being actuated in response to the means for sensing swinging movement of said elevator.

2. A combine harvester as claimed in claim 1 in which the excess crop material is returned to the intake end of the elevator.

3. A combine harvester as claimed in claim 1 in which the excess crop material is fed to a collector container provided on said harvester and is fed therefrom in metered quantities to the threshing apparatus.

4. A combine harvester as claimed in claim 3 in which the metering is effected by metering rollers.

5. A combine harvester substantially as hereinbefore described with reference to and as illustrated in figure 1 or figure 2 of the accompanying drawings.

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1 SHEET. This drawing is a reproduction of
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